

IN THE SPECIFICATION:

Please replace the title of the invention with the following title:

ELECTRICAL DEVICE FOR CHARGING BATTERIES

Please amend the first paragraph of the Description of the Related Arts section, on page 1, as follows:

In recent years, a ~~very large number of kinds~~ variety of portable apparatuses including digital video cameras, digital still cameras, and the like have been accepted by various generations and widely used. Most of these portable apparatuses use batteries as power sources ~~of such portable apparatuses are batteries~~. Particularly, in recent years, with the ~~background of~~ the advancement of ~~[[a]] battery technique~~ technology, increase in recycling consciousness of the users, or the like, many portable apparatuses can ~~operate~~ be powered by chargeable batteries (for example, lithium-ion battery).

Please amend the second paragraph of the Description of the Related Arts section, beginning on page 1, as follows:

In accordance with an increase in demand for such a chargeable battery, many battery chargers for charging the battery by using an AC power source have been sold. ~~As conventional~~ Conventional battery chargers include ~~there are~~ a battery charger in which an AC plug can be enclosed in a charger main body (refer to JP-A-6-38388) and a battery charger having a contact member by which a charger main body and an AC plug can ~~be come into contact with~~ each other (refer to the Official Gazette of Japanese Utility Model Registration Application No. 5-88152). According to JP-A-6-38388, the AC plug is rotated around a rotary shaft, as a center, which penetrates a supporting portion for supporting two conductive blades which the AC plug has, so that the AC plug is projected

by 90° from the main body of the charger and inserted into an outlet of an AC power source. In this case, the AC plug is rotated in the direction of plate surfaces of the two blades.

Please amend the second full paragraph on page 2 as follows:

Examples of conventional battery chargers which belong to such a type are shown in Figs. 1A, 1B, and 2. Figs. 1A and 1B are a side elevational view (Fig. 1A) and a top view (~~Fig. 7B~~) (Fig. 1B) showing a state where an AC plug which is inserted into an outlet of an AC power source is projected at an angle of about 90° to a casing of a battery charger.

Please amend the paragraph beginning on line 26 of page 2 as follows:

Fig. 1A shows a state where an AC plug 51 having two conductive blades 52, an AC plug rotary shaft 53, and contact portions 54 which contact and are electrically ~~come into contact with~~ connected to the conductive blades, which ~~is projected~~ project at an almost right angle to a casing 50 of a battery charger. The AC plug 51 can be laterally rotated around the AC plug rotary shaft 53 as a center by about 90° in the direction of an arrow (d). By such a rotation, the AC plug 51 is enclosed into the casing 50. The contact portions 54 are arranged on the surface of the AC plug rotary shaft 53. The contact portions 54 are electrically connected to the corresponding conductive blades 52, ~~respectively~~.

Please amend the first full paragraph on page 3 as follows:

The contact portions 54 are arranged around ~~a surface~~ an outer peripheral surface portion of the circular AC plug rotary shaft 53 so as to face each other while sandwiching a center point of the AC plug rotary shaft 53, ~~respectively~~. In the state shown in Fig. 1A, the contact portions

54 ~~are come into~~ contact with two corresponding conductive spring terminals 55 and are electrically connected thereto, ~~respectively~~.

Please amend the second full paragraph on page 4 as follows:

According to the battery charger of ~~such a~~ this type, as ~~will be~~ obviously understood particularly with reference to shown in Fig. 1A, the contact portions 54 of the poles are arranged on the same side of the surface of the AC plug rotary shaft 53 of the AC plug 51 ~~on the same side~~.

Please amend the third full paragraph on page 4 as follows:

However, in the conventional battery charger, since the two contact portions are arranged only on one surface of the AC plug rotary shaft as mentioned above, ~~such a~~ one problem is that a distance between the two contact portions has to be set to a predetermined value or more in order to satisfy ~~a request according to the foreign safety standard~~ standards is caused. According to UL (Underwriters Laboratories) 1310 as a ~~foreign~~ safety standard, 6.4 mm or more has to be assured as a distance between the contact portions in this case.

Please amend the paragraph beginning on line 26 of page 4 as follows:

Further, ~~such a~~ another problem of conventional battery chargers is that the rotary shaft portion of the AC plug and the conductive spring terminals also have to be enlarged in size ~~is also caused~~ because the distance between the two contact portions is set to the predetermined value or more. ~~There is, consequently~~ Consequently, ~~such a problem that~~ a predetermined space is necessary in the portion around the rotary shaft of the AC plug and ~~a size of the~~ battery charger cannot be miniaturized.

Please amend the second full paragraph on page 9 as follows:

According to the battery charger 1 of the embodiment, a battery as a target to be charged is attached to a groove portion on the left side shown in Fig. 4D. The battery is attached by sliding the battery along the groove portion in the direction of an arrow (c) shown in Fig. 4A and moving it to a position of a front edge of the arrow (c). Thus, terminals of the battery ~~are come into~~ contact with the terminal contact portions in a slide shutter 9 and the battery is charged in this state.

Please amend the third full paragraph on page 9 as follows:

~~In~~ Fig. 4A also shows ~~[[,]]~~ a claw 6 for locking the battery, a hook-shaped pressing member 7 ~~upon sliding of the battery~~, and a charge lamp 8.

Please amend the paragraph beginning on line 24 of page 9 as follows:

A structure of the AC plug 3 will now be described in detail. Figs. 5A to 5C are schematic diagrams showing a construction of the conductive blade 4. Fig. 5A is a front view of the conductive blade 4, Fig. 5B is a bottom view of the conductive blade 4, and Fig. 5C is a side elevational view of the conductive blade 4, ~~respectively~~.

Please amend the first full paragraph on page 10 as follows:

As shown in Fig. 3, ~~although~~ the AC plug 3 includes the two conductive blades 4~~[[,]]~~ and the conductive blades 4 may have ~~of the same shape can be used in the embodiment of the invention~~. As shown in Fig. 5B, one end of the conductive blade 4 has a plate surface of a predetermined width and this portion is inserted into the outlet of the AC power source (hereinafter, this portion is referred to as an inserting portion). A width, a thickness, a length, and the like of this portion are set in accordance with a predetermined standard. The other end of the conductive blade 4 is extended in an L-character shape and its front edge

is used as a contact portion 15. By setting the AC plug 3 into a state where it is projected at an almost right angle to the casing 2 of the battery charger 1, the contact portion 15 ~~is come into contact~~ contacts with a conductive spring terminal and supplies the AC power source to a circuit section on the board.

Please amend the second full paragraph on page 10 as follows:

As shown in Figs. 5A and 5C, ~~in the conductive blade 4,~~ the inserting portion and the contact portion 15 are formed almost in parallel and a narrow width portion between them is formed in an obliquely bent shape so as to connect those two portions (hereinafter, such a bent portion is referred to as a narrow width portion). Owing to such a construction, a rotational radius according to the AC plug 3 can be reduced, ~~and this~~ This point will be also explained in detail hereinafter.

Please amend the first full paragraph on page 11 as follows:

Figs. 6A to 6D are schematic diagrams showing a construction of the AC plug 3. Fig. 6A is a front view of the AC plug 3, Fig. 6B is a side elevational view of the AC plug 3, Fig. 6C is a rear view of the AC plug 3, and Fig. 6D is a top view of the AC plug 3, ~~respectively.~~

Please amend the paragraph beginning on line 6 of page 11 as follows:

As will be obviously understood from Fig. 6B, the AC plug 3 includes the two conductive blades 4. Mainly, the narrow width portions of the conductive blades 4 are embedded into, for example, an insulative resin or the like, so that the AC plug 3 is supported (portions shown by broken lines in Fig. 6B). The inserting portions and the contact portions 15 are extended to the outside from the insulative resin or the like. As mentioned above, the two conductive blades 4 which are used here have the same shape. Therefore, as shown in Fig. 6D, the contact portion 15 of

one conductive blade 4 is extended from a first surface 11 side and the contact portion 15 of the other conductive blade 4 is extended from a second surface 12 side opposite to the first surface 11 side. The two conductive blades 4 come closest to each other at positions where the contact portions 15 are extruded from the insulative resin or the like. The approaching portion is one end of the narrow width portion and is a portion which is connected to the contact portion 15. By using the structure in which the conductive blades 4 are integrated with the insulative resin, a request specified distance (insulation distance in the resin) of UL1310 is reduced to 0.8 mm and the two conductive blades can be arranged substantially in very close vicinity to each other.

Please amend the third full paragraph on page 12 as follows:

As shown in Fig. 6B, a concave portion 18 for a clicking mechanism is formed at a right edge of the AC plug 3 and a claw adapted to be fitted into this concave portion is provided for the casing 2. Thus, they function so as to temporarily hold the AC plug 3 in each of the state where the AC plug 3 is enclosed in the casing 2 of the battery charger 1 and the state where the AC plug 3 is projected from the casing 2 of the battery charger 1.

Please amend the paragraph beginning on line 22 of page 12 as follows:

Referring to Figs. 7A to 7C, a positional relation among the AC plug 3, the casing 2 of the battery charger 1, and the conductive spring terminals will be described. Figs. 7A to 7C are schematic diagrams showing a peripheral structure in the AC plug 3 and the casing 2. Fig. 7A shows a state where the AC plug 3 is enclosed in the casing 2 of the battery charger 1. Figs. 7B and 7C show how the two contact portions 15 in the AC plug 3 ~~are come into~~ contact with two corresponding conductive spring terminals 17.

Please amend the third full paragraph on page 13 as follows:

Owing to the construction of the invention, the two contact portions 15 are ~~respectively~~ arranged on opposite ~~the side surface~~ surfaces of the AC plug 3 ~~on the opposite side~~ and one end of the narrow width portion of each conductive blade 4 is supported by the insulative resin or the like. Thus, the two conductive blades 4 can be arranged in very close vicinity (for example, at an interval of 0.8 mm) near the rotary shaft of the AC plug 3.

Please amend the paragraph beginning on line 27 of page 13 as follows:

To assure distances from other parts in the board, it is also possible to construct the battery charger 1 in such a manner that the contact portions 15 are not projected from the main body of the AC plug 3 as possible. For example, a distance between the edge portion of one contact portion 15 and the edge portion of the other contact portion 15 can be set to about 8.4 mm (as a distance on the rotary shaft of the AC plug 3).

Please amend the full paragraph on page 14 as follows:

The structure of the AC plug 3 of the battery charger 1 according to ~~the embodiment of the~~ present invention and that of the AC plug 51 of the conventional battery charger mentioned above will now be described with reference to Figs. 8A to 8D. Fig. 8A is a rear view of the AC plug 3 of the battery charger 1 according to ~~the embodiment of the~~ present invention, and similar to Fig. 6C. Fig. 8B is a top view of the AC plug 3 of the invention ~~and is a schematic diagram~~ showing a transition of the state where the AC plug 3 is rotated by about 90°. Fig. 8C is a rear view of the AC plug 51 of the conventional battery charger. Fig. 8D is a top view of

the conventional AC plug 51 and ~~is a schematic diagram~~ showing a transition of the state where the AC plug 51 is rotated by about 90°.

Please amend the paragraph beginning on line 21 of page 14 as follows:

As will be understood by comparing Figs. 8A and 8C, in the AC plug 3 of the battery charger 1 according to ~~the embodiment of the~~ present invention, the contact portions 15 are arranged on both side surfaces of the AC plug 3. Therefore, ~~in the embodiment of the invention,~~ in the direction which perpendicularly crosses the rotary shaft of the AC plug 3, the interval between the two conductive blades 4 near the rotary shaft of the AC plug 3 can be set to, for example, 0.8 mm and the two contact portions 15 can be allowed to approach the rotary shaft of the AC plug 3 while satisfying ~~the request of the foreign~~ safety standard UL1310. In other words, since the portion of the conductive blade near one contact portion and the portion of the conductive blade near the other contact portion are isolated by, for example, the insulative resin or the like, they can be provided in close vicinity. In the invention, the rotational radius of the contact portion 15 can be reduced and the space ~~distance from~~ between each of the peripheral parts can be easily assured. For example, the rotational radius of the contact portion 15 in this case can be set to about 4.30 mm.

Please amend the full paragraph on page 15 as follows:

On the other hand, in the AC plug 51 of the conventional battery charger, the contact portions 54 are arranged on only one side of the AC plug 51. Therefore, the interval between them in the direction which perpendicularly crosses the rotary shaft of the AC plug 51 has to be set to 6.4 mm or more due to ~~the request of the foreign~~ safety standard UL1310. Thus, in the conventional battery charger, the rotational radius of the contact portion 54 is large and it is difficult to assure the space distance

from between each of the peripheral parts. For example, the rotational radius of the contact portion 54 in this case is equal to about 6.33 mm or more.